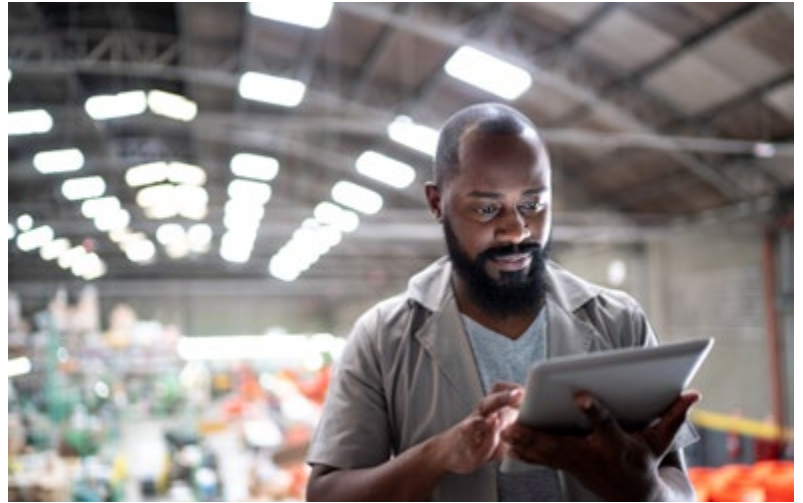# Digital Transformation
in Supply Chain Planning: 2021

—

Survey-based Research Study

Companies are accelerating their digitization efforts and investing in new technologies to keep up with evolving customer behaviors and improve business performance.

EXECUTIVE SUMMARY

Digital Planning Offers Pragmatic Solutions to Post-COVID Supply Chain Challenges

COVID-19 has ruthlessly exposed supply chain weaknesses and is sharpening the focus and definition of supply chain digitization from a platitude to a critical path to survival. Companies around the world are urgently seeking ways to better plan around supply chain demand volatility and improve resilience and agility by converting legacy processes and technologies to digital.

Demand volatility, inventory shortages and surpluses, and staffing challenges are revealing process vulnerabilities across virtually all industries. As a result, companies are investing in technologies to increase supply chain automation and help them keep pace with evolving customer expectations. In fact, 42% of organizations say the pandemic has accelerated their digitization plans. These are just some of the findings of a global survey conducted by the Council of Supply Chain Management Professionals (CSCMP) and ToolsGroup aimed at benchmarking supply chain digital transformation strategies in a post-pandemic economy.

CSCMP and ToolsGroup surveyed more than 200 supply chain professionals around the world for the report, which gauges the state of supply chain planning digital transformation by analyzing respondent data, comparing it with results from ToolsGroup's 2019 report on digital transformation strategies, where applicable, and examining tr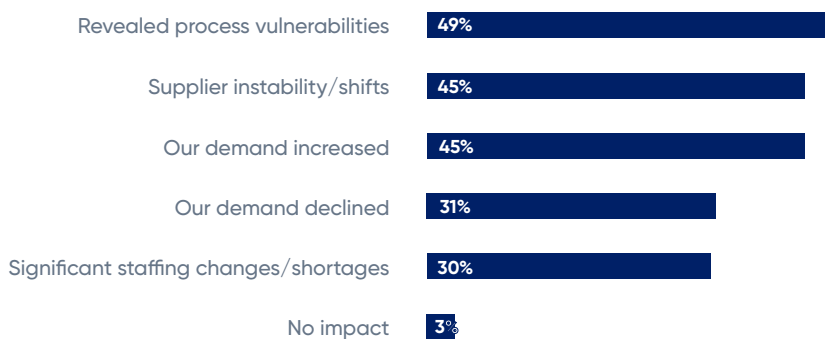ends considering other industry research. Respondents include executives, managers, and planners/practitioners from manufacturing, retail, consumer packaged goods, aftermarket parts, wholesale-distribution, and third-party logistics services (3PL) firms, as well as consulting organizations.

42% of organizations say the pandemic has accelerated their digitization plans.

The survey results show that digital transformation is accelerating in supply chain organizations around the world, and that although obstacles still exist, companies are seizing opportunities to invest in technologies such as demand sensing, inventory optimization, and transportation planning, which can help them keep up with evolving customer behaviors, improve business performance, and maximize resources.
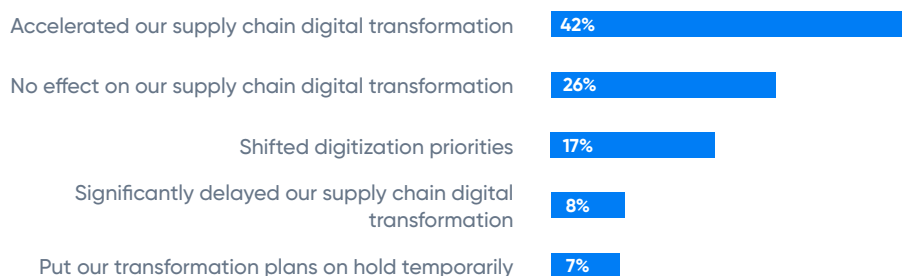
DIGITAL TRANSFORMATION STRATEGIES ACCELERATE

+ Figure 1 How has COVID-19 affected your business?

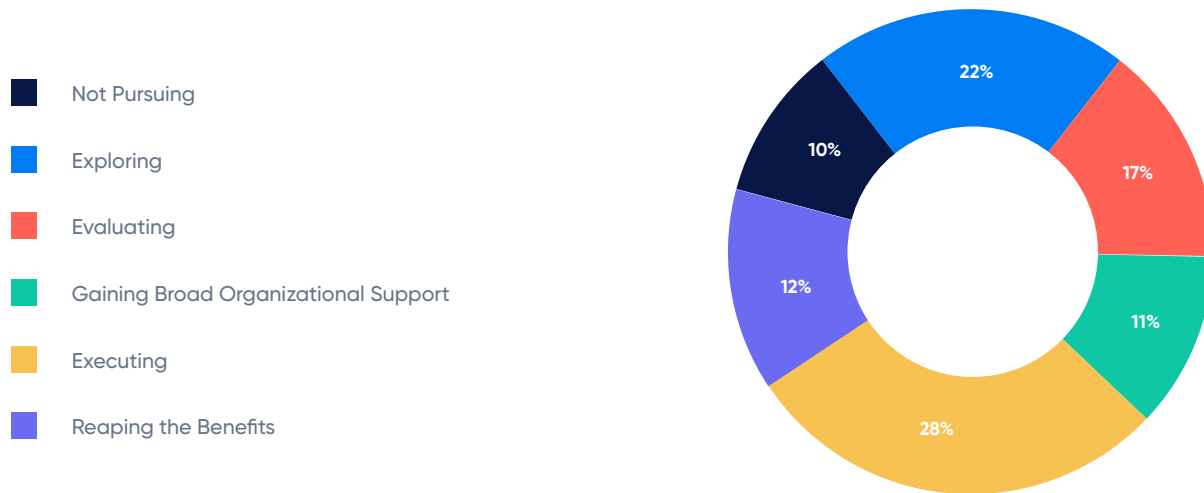| Category	Percentage
Revealed process vulnerabilities	49%
Supplier instability/shifts	45%
Our demand increased	45%
Our demand declined	31%
Significant staffing changes/shortages	30%
No impact	3%

The past year has had a profound impact on supply chain organizations. The vast majority of respondents said the pandemic affected their business in some way, primarily by revealing process vulnerabilities **(49%)** and supplier instability **(45%)**, but also by increasing demand for their products and services **(45%)**. Declining demand **(31%)** and staffing shortages **(30%)** also challenged many firms. Just **3%** said the pandemic has had no effect on their business. *(See Figure 1)*

+ Figure 2 How has the COVID-19 pandemic influenced your supply chain digitization strategy?

Category	Percentage
Accelerated our supply chain digital transformation	42%
No effect on our supply chain digital transformation	26%
Shifted digitization priorities	17%
Significantly delayed our supply chain digital transformation	8%
Put our transformation plans on hold temporarily	7%

These problems bled into their digital transformation strategies, with nearly **75%** of respondents saying the COVID-19 pandemic affected their journey toward digital transformation: **42%** of respondents said the pandemic has accelerated the digital transformation of their supply chains; **17%** said the pandemic has shifted their organizations' digitization priorities; and **15%** said the pandemic either delayed or put their transformation plans on hold. Just over a quarter of respondents said the pandemic has had no effect on their digital transformation strategy. *(See Figure 2)*

+ Figure 3 **What stage of supply chain planning digital transformation journey would you say your organization is in?**

Not Pursuing

Exploring

Evaluating

Gaining Broad Organizational Support

Executing

Reaping the Benefits

A closer look shows that most companies have made strides to advance their transformation journey in the past year. The survey asked respondents to characterize what phase they are on in that journey—either "not pursuing", "exploring", "evaluating", "gaining broad organizational support", "executing", or "reaping the benefits" of transformation. The majority **(90%)** are somewhere along the journey, with **39%** in the exploring or evaluating phases, another **39%** in the gaining support or executing phases, and **12%** in the reaping the benefits phase. Just **10%** said they are not pursuing a digital transformation strategy at all. *(See Figure 3)* The largest companies surveyed—those with more than $5 billion in annual sales—are the furthest along the digital journey and make up the bulk of those in the reaping the benefits phase.

The largest companies surveyed—those with more than $5 billion in annual sales—are the furthest along the digital journey and make up the bulk of those in the reaping the benefits phase.
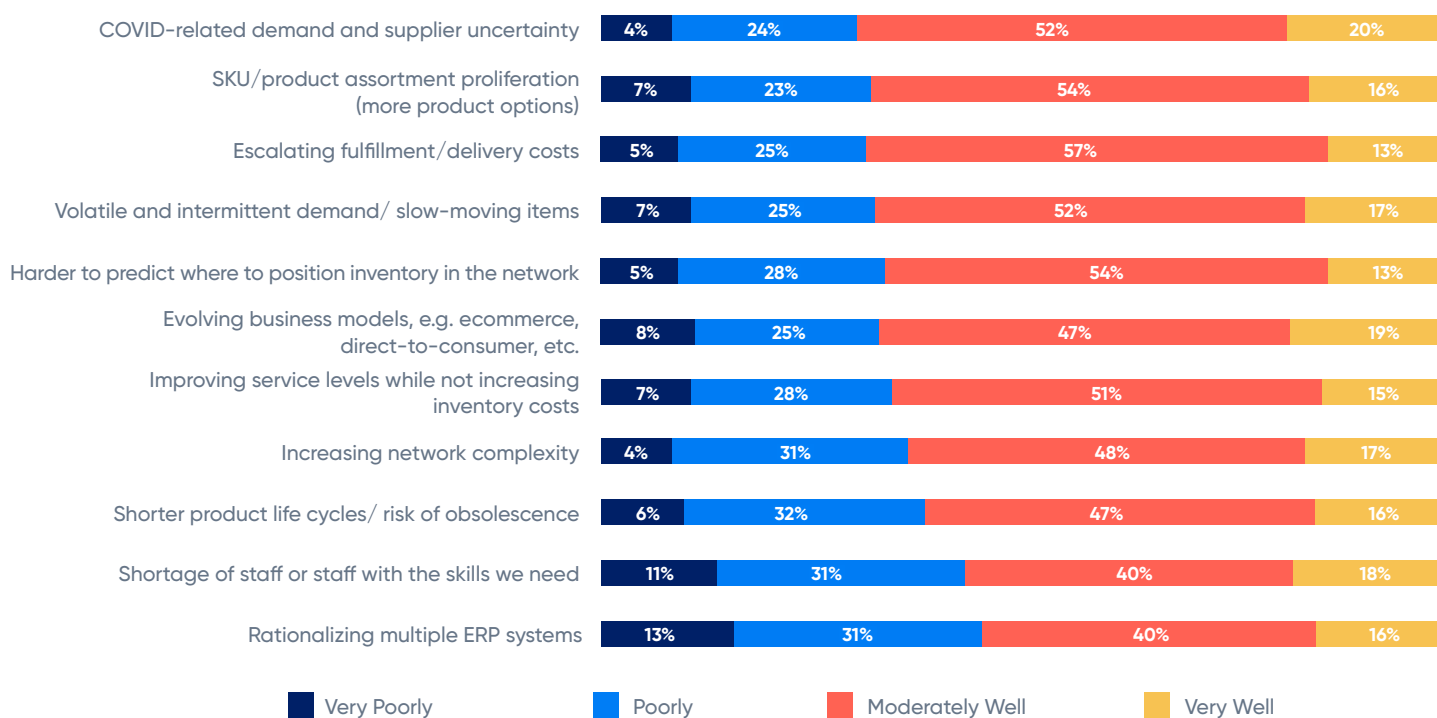
Drilling down deeper, half of respondents in the reaping the benefits phase of their journey reported that the COVID-19 pandemic accelerated their digital transformation. This was true of just under **50%** of those in the executing and evaluating phases (**48%** and **49%**, respectively) while about **40%** in both the gaining support and exploring phases said the pandemic pushed them further along. For those companies not pursuing digital transformation, not even COVID could get them on board: **76%** reported that the pandemic had no effect on their move toward digital transformation.

These results echo those of other industry surveys on the accelerated pace of change in the supply chain during 2020. A McKinsey global survey of executives revealed that companies have accelerated the digitalization of their customer and supply-chain interactions and their internal operations by three to four years since the pandemic hit. The survey also found that companies increased the share of digital or digitally enabled products in their portfolios by seven years. As consumers have moved quickly and dramatically toward online channels, supply chains are responding in kind by stepping up to the ever-increasing challenges of demand volatility.
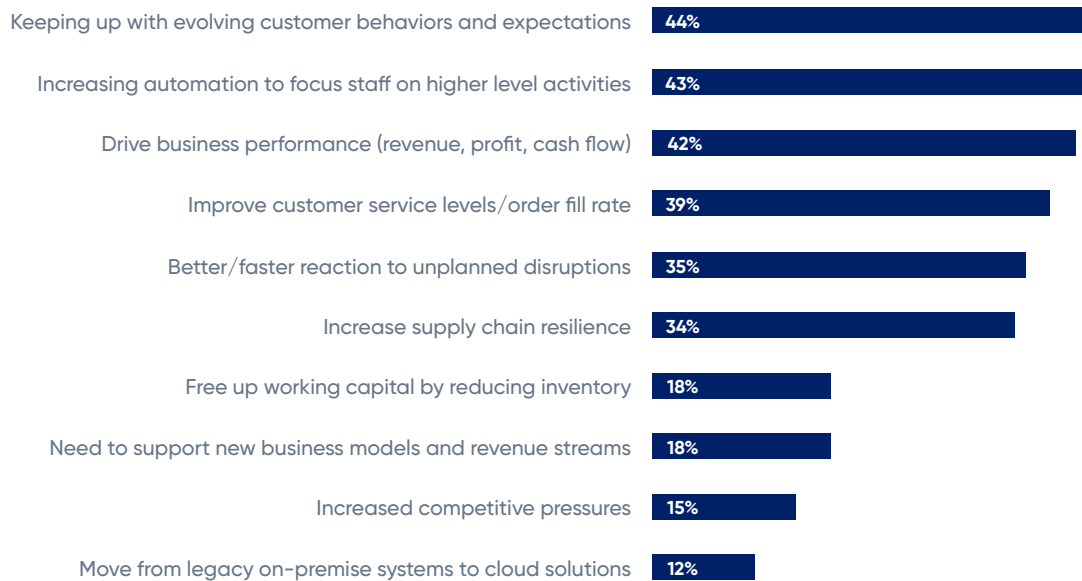
FACING CHALLENGES, FINDING OPPORTUNITIES

+ Figure 4 How well does your company handle these supply chain planning factors today?

Factor	Very Poorly	Poorly	Moderately Well	Very Well
COVID-related demand and supplier uncertainty	4%	24%	52%	20%
SKU/product assortment proliferation (more product options)	7%	23%	54%	16%
Escalating fulfillment/delivery costs	5%	25%	57%	13%
Volatile and intermittent demand/ slow-moving items	7%	25%	52%	17%
Harder to predict where to position inventory in the network	5%	28%	54%	13%
Evolving business models, e.g. ecommerce, direct-to-consumer, etc.	8%	25%	47%	19%
Improving service levels while not increasing inventory costs	7%	28%	51%	15%
Increasing network complexity	4%	31%	48%	17%
Shorter product life cycles/ risk of obsolescence	6%	32%	47%	16%
Shortage of staff or staff with the skills we need	11%	31%	40%	18%
Rationalizing multiple ERP systems	13%	31%	40%	16%

Legend: ■ Very Poorly   ■ Poorly   ■ Moderately Well   ■ Very Well

Supply chain organizations face myriad challenges, and the pandemic has intensified many of them. When asked how well their companies have handled factors such as SKU proliferation, escalating delivery costs, and supplier uncertainty in the past year, a high number of respondents gave their firms good grades, saying they performed those duties either "moderately well" or "very well" (**70%, 70%,** and **72%**, respectively). They fared worse in other areas. When it came to handling staffing shortages and rationalizing multiple ERP systems, companies were less successful, with **58%** and **56%**, respectively, saying they handled those duties "moderately well" or "very well". *(See Figure 4)*

+ Figure 5 What are the key drivers of supply chain planning digital transformation in your organization?

Driver	Percentage
Keeping up with evolving customer behaviors and expectations	44%
Increasing automation to focus staff on higher level activities	43%
Drive business performance (revenue, profit, cash flow)	42%
Improve customer service levels/order fill rate	39%
Better/faster reaction to unplanned disruptions	35%
Increase supply chain resilience	34%
Free up working capital by reducing inventory	18%
Need to support new business models and revenue streams	18%
Increased competitive pressures	15%
Move from legacy on-premise systems to cloud solutions	12%

Figures add to more than 100% due to multiple responses.

The need to get a better handle on those challenges, and ultimately improve business performance across the board, is what's driving organizations to implement digital transformation. The top three reasons for pursuing such a strategy are: the ability to keep up with evolving customer behaviors and expectations **(44%)**; the need to increase automation to focus staff on higher level activities **(43%)**; and an overall desire to improve business performance (revenue, profit, cash flow) **(42%)**. Other top factors include improving customer service levels **(39%)**; improving reaction to unplanned disruptions **(35%)**; and increasing supply chain resilience **(34%)**. *(See Figure 5)*

+ Figure 6 What obstacles stand in the way of implementing your supply chain digital transformation plans?

Obstacle	Percentage
People/skills deficits	41%
Data quality/lack of data	34%
COVID-related uncertainty	28%
Rigid technology infrastructure	28%
Fear of change/risk aversion	28%
Lack of investment/digital transformation is viewed as a cost and not an investment	27%
Lack of digital transformation roadmap	27%
Disconnect between IT and the business	19%
Nothing is holding our organization back	19%
No sense of urgency	17%
Cannot prove the business case (ROI)	12%
Lack of executive buy-in	10%

Figures add to more than 100% due to multiple responses.

The road to improvement is not a clear and open path, however. Organizations cite a host of obstacles that stand in the way of their transformation strategies. The biggest is a skills deficit among their staff **(41%)**, followed by data quality/lack of data **(34%)**. COVID-related uncertainty **(28%)**, an existing rigid technology structure (28%), and fear of change **(28%)** are also roadblocks. *(See Figure 6)* These top factors represent a shift from what ToolsGroup found in its 2019 survey. Two years ago, respondents listed fear of change, data quality/lack of data, risk aversion, skills deficits, and rigid technology structure as the top five obstacles they faced, in that order.

Taking a closer look, organizations face different challenges depending on how far along they are on their digital transformation journey.

- Companies **not pursuing a transformation strategy** are most likely to cite fear of change, lack of data, or a lack of investment as issues that are holding them back.
- Companies in the **exploring phase** are most likely to cite skills deficits as they struggle to develop a transformation strategy.
- Companies in the **evaluating phase** list three key challenges: risk aversion, lack of data, and skills deficits.
- Companies in the **gaining support phase** say fear of change is a top issue, as is the fear that they can't prove a business case for transformation.
- Companies in the **executing phase** cite a lack of data as a key obstacle to moving forward, most likely because this is the phase in which data issues become more apparent and troublesome.
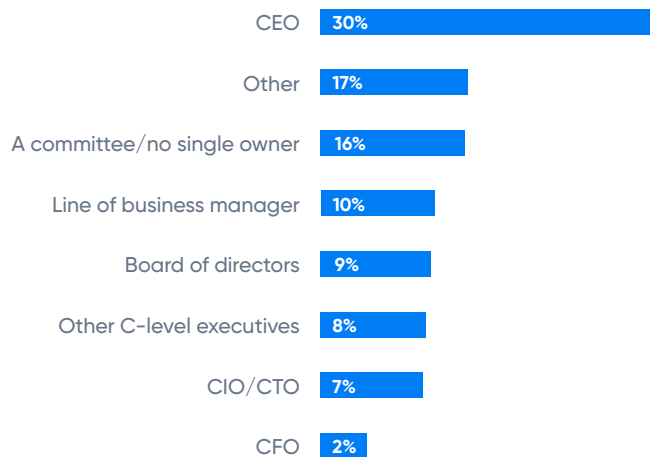
Skills deficits rank high for those in the early phases of transformation as companies assess the skills they will need to execute and reap the benefits of improvement. A 2020 study from Boston Consulting Group underscores this trend. The research found that digital transformation requires people to acquire new capabilities—and that doing so may be one of the most difficult aspects of the journey.

Skills deficits rank high for those in the early phases of transformation as companies assess the skills they will need to execute and reap the benefits of improvement.

"Both managers and employees feel hiring, training, and upskilling are the least successful elements of their company's transformation," according to the research.

LEADING FROM THE TOP, INVESTING FOR THE FUTURE

+ Figure 7 Who is leading/driving supply chain planning digital transformation in your organization?

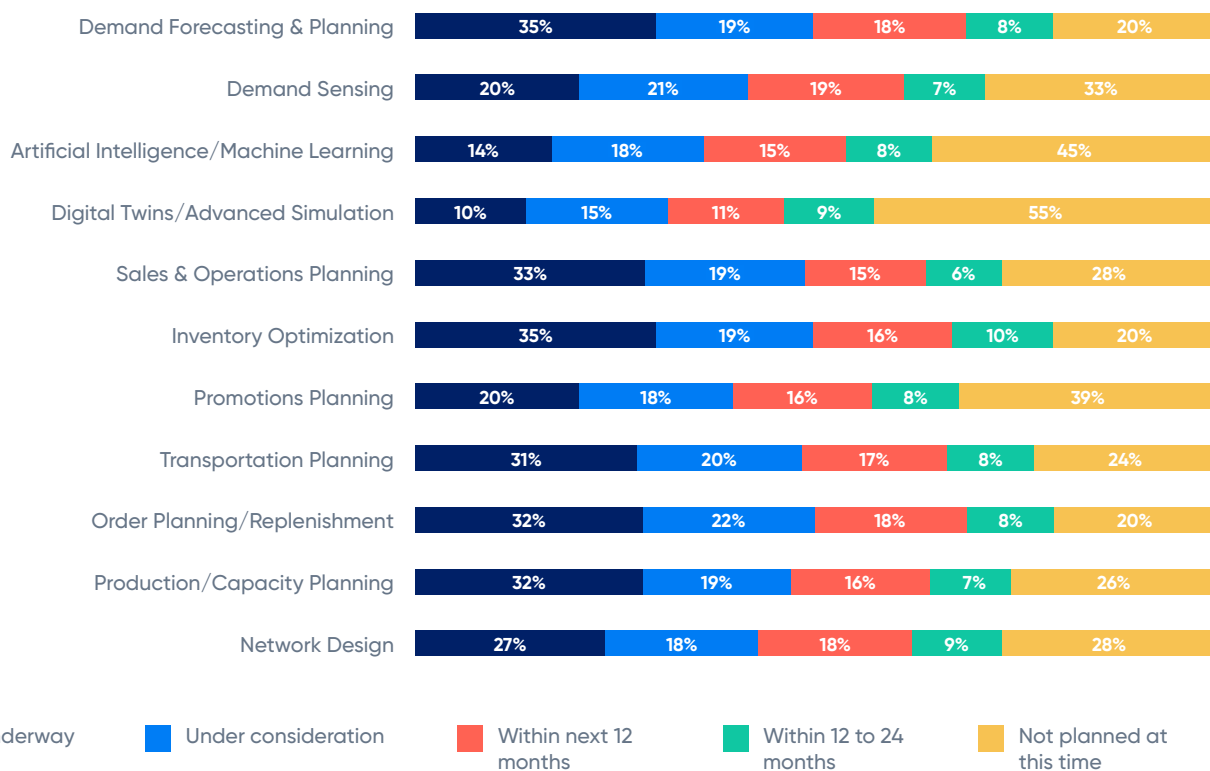|	
CEO	30%
Other	17%
A committee/no single owner	16%
Line of business manager	10%
Board of directors	9%
Other C-level executives	8%
CIO/CTO	7%
CFO	2%

Half of those firms in the reaping the benefits phase say their transformation is being led by their CEO, whereas those not pursuing a strategy say their digitization efforts are being led by line of business managers.

Thirty percent of respondents say their company's CEO is leading their digital transformation strategy, followed by a smattering of other transformation leaders. For many firms, the task falls to leaders with operations, supply chain, and logistics responsibilities, while others say the effort is being driven by a committee of managers and staff. *(See Figure 7)* Findings suggest that driving the effort from higher up leads to better outcomes: Half of those firms in the reaping the benefits phase say their transformation is being led by their CEO, whereas those not pursuing a strategy say their digitization efforts are being led by line of business managers.

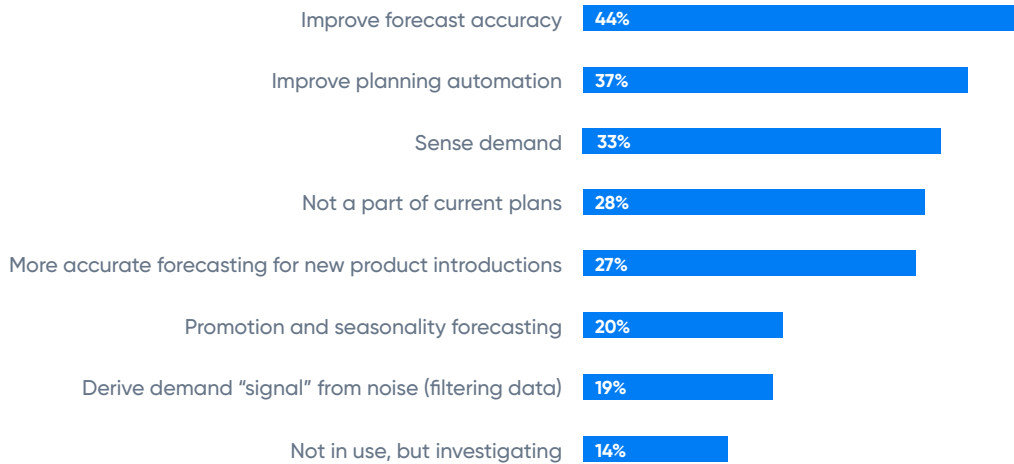**+ Figure 8** What are your investment plans for these technologies?

	Project underway	Under consideration	Within next 12 months	Within 12 to 24 months	Not planned at this time
Demand Forecasting & Planning	35%	19%	18%	8%	20%
Demand Sensing	20%	21%	19%	7%	33%
Artificial Intelligence/Machine Learning	14%	18%	15%	8%	45%
Digital Twins/Advanced Simulation	10%	15%	11%	9%	55%
Sales & Operations Planning	33%	19%	15%	6%	28%
Inventory Optimization	35%	19%	16%	10%	20%
Promotions Planning	20%	18%	16%	8%	39%
Transportation Planning	31%	20%	17%	8%	24%
Order Planning/Replenishment	32%	22%	18%	8%	20%
Production/Capacity Planning	32%	19%	16%	7%	26%
Network Design	27%	18%	18%	9%	28%

A large part of the transformation journey includes investing in new technologies that can improve the supply chain planning process. Demand forecasting/planning **(35%)** and inventory optimization **(35%)** are the most common technology projects currently underway, followed by sales and operations planning **(33%)**, order planning/replenishment **(32%)**, and production/capacity planning **(32%)**. Technologies lagging in development include those focused on artificial intelligence (AI) and machine learning **(14% underway)** and those that involve digital twins and advanced simulation (just 10% underway). *(See Figure 8)* For those involved in AI projects, most are using the technology to improve forecasting accuracy **(44%)** and planning automation **(37%)**, as well as for demand sensing **(33%)**. Roughly **40%** of respondents said that AI is either not a part of their current technology plans or that they are just beginning to investigate its potential. *(See Figure 9)*

> **Demand forecasting/ planning (35%) and inventory optimization (35%) are the most common technology projects currently underway.**

+ Figure 9 How do you plan to adopt AI/machine learning as part of your supply chain digital transformation?

Improve forecast accuracy	**44%**
Improve planning automation	**37%**
Sense demand	**33%**
Not a part of current plans	**28%**
More accurate forecasting for new product introductions	**27%**
Promotion and seasonality forecasting	**20%**
Derive demand "signal" from noise (filtering data)	**19%**
Not in use, but investigating	**14%**

Figures add to more than 100% due to multiple responses.

The growing interest in AI is in line with late 2020 research from Gartner that showed **47%** of AI investments were unchanged since the start of the pandemic and that **30%** of organizations planned to increase those investments. Just **16%** of companies had temporarily suspended AI investments, and just **7%** had decreased them, Gartner found.
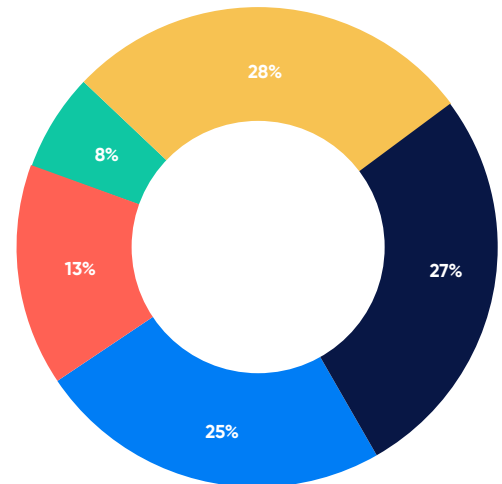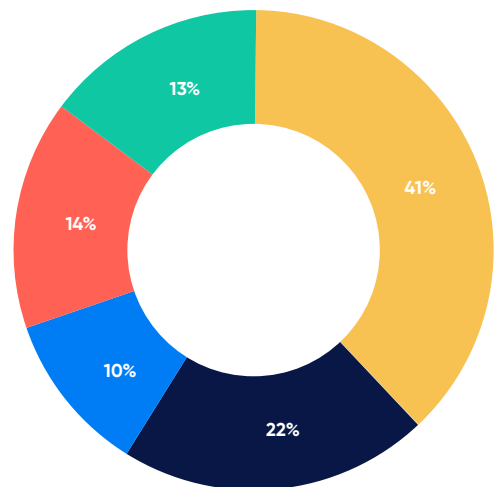

IN SUMMARY

Accelerating e-commerce activity, labor challenges, and the need to deliver an omnichannel business experience are driving organizations of all types and sizes to adopt digital-first strategies. Aligning supply chain planning activities around those goals will continue to be front and center as firms strive to accommodate lingering demand volatility and supplier instability while accounting for new challenges on the horizon. Investing in new technologies and skills development, and expanding their digital networks will be vital to meeting those goals.
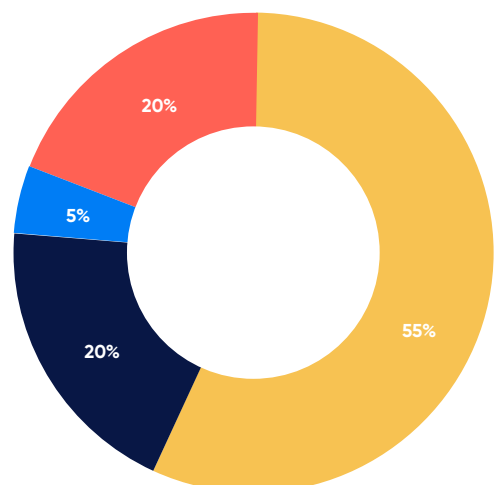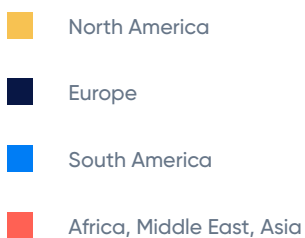
RESEARCH DEMOGRAPHICS

+ Figure 10 **Which best describes your role in the organization?**

- Manager Level
- Director Level
- Planner/Analyst/Other Practitioner
- C-Level Officer
- Vice President Level

28%
27%
25%
13%
8%

+ Figure 11 **What is your company's approximate annual revenue?**

- Less than $100 million
- $100 million to $500 million
- $500 million to $1 billion
- $1 billion to $5 billion
- Greater than $5 billion

41%
22%
10%
14%
13%

+ Figure 12 **In what geographical region are you located?**

- North America
- Europe
- South America
- Africa, Middle East, Asia

55%
20%
5%
20%

+ About CSCMP

Since 1963, the Council of Supply Chain Management Professionals (CSCMP) has been providing networking, career development, and educational opportunities to the logistics and supply chain management community. CSCMP's mission is: "To advance the supply chain profession by connecting, educating, and developing the world's supply chain management professionals throughout their careers."

+ About ToolsGroup

ToolsGroup is how organizations achieve their target service levels while optimizing inventory, no matter how complex their supply chain is or how much demand changes. In a world that never follows the rules, organizations have to be ready for anything—from the challenges of multi-echelon inventory optimization to the endless surprises of sporadic demand. To do this, they have to predict more behaviors, protect against surprises, and perform more efficiently. Only ToolsGroup makes all this possible. That's why global leaders like Absolut, BP and Harley-Davidson continue to rely on us year after year. Visit www.ToolsGroup.com and follow us on Twitter @ToolsGroup.

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